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Parole della Verita," in its various forms; on a peculiarity of the Book of Tobit; on the Novelle of Cieco da Ferrara; on the Apologue of Menenius Agrippa, etc. All of these show extensive reading and sound critical judgment.

#### FALL MEETING OF THE ALABAMA INDUSTRIAL AND SCIENTIFIC SOCIETY.

In December, 1890, this society was organized "for the promotion of the scientific examination and discussion of various questions of interest to the material progress of the state." The last meeting of this society was held in Birmingham on Nov. 24, when several papers of considerable interest were presented.

Mr. Murray, of the Linn Iron Works, described an improvement made by him in boilers. This improvement consists in the use of a double decked boiler with a mud drum below, and a further improvement was a modification of the Speerman-Kennedy gas burner. Mr. A. E. Barton, Superintendent of the Ensley Furnaces, read a paper "On the Grading of Southern Pig-Iron," in which he discussed the change from the old method of fifteen grades to the present one of eleven grades. He also emphasized the necessity of frequent analyses of the furnace products as an aid to the proper grading.

Mr. Erskine Ramsay, Mining Engineer at the Pratt Mines, and President of the Society, read a paper "On the Use of Coke Oven Gases and Heat in the Generation of Steam." The system in use at the Pratt Mines, which has been very carefully worked out by Mr. Ramsay, has resulted in considerable economy. The coke ovens are provided with a gas flue running the entire length of the battery through which the gases are delivered under the boilers. Mr. Ramsey showed that the heat thus utilized was merely the waste heat of the coke ovens, and that none of it was due to the combustion of the gases themselves. Attempts to utilize the heat of combustion were not successful.

Dr. William B. Phillips, consulting chemist of the Tennessee Coal, Iron and Railway Company, read a paper on the "Improvement of the Iron Ores of the Birmingham District," in which he described certain processes which he has for some time been investigating, by which it will be possible to free the red ores of the Clinton or Red Mountain formation from the greater part of the silica, as well as from most of the phosphorus. The freeing of the iron from the silica is effected by means of an electromagnet, the ores having been previously magnetized by heating them in an atmosphere of combustible gas. Operating upon 3,000 pounds at a time, the crude ore, which contained 40 per cent of iron and 29 per cent of silica, was so improved as to yield 57 per cent of iron and only 10 per cent of silica. In some cases even better results than this have been obtained. The success of these experiments has induced the company to make a test on a large scale in one of their furnaces in Bessemer, and if successful there also (and of this there seems to be no reasonable ground for doubt), a vast amount of ore will at once become available, which is now thrown aside because carrying from 25 per cent to 35 per cent of silica.

Mr. H. F. Wilson, Jr., described some work of his in tracing the great seams of ore along the Red Mountain on both sides of Grace's Gap, illustrating his remarks by some handsome drawings and sections. This paper was a valuable supplement to that of Dr. Phillips.

The financial depression of the last year or two has left its impress upon the society, but at this last meeting nine new members were elected, and a marked increase of interest was shown in the number of papers presented and in the discussions which followed.

#### ALABAMA GEOLOGICAL SURVEY.

THE field work of the geological survey during the past season has been in the gold region of Coosa, Talladega, Tallapoosa, Cleburne, Randolph and Clay Counties. Before the discovery of gold in California a great amount chiefly of placer work was done in Alabama, and many thousands of dollars' worth of gold raised. This work was almost suspended when the new fields of California were brought to notice, for the gold miners of Georgia and Alabama flocked to the new country to try their fortunes. Since 1849, the mining of gold in Alabama has been somewhat desultory, though never entirely abandoned. During the past five years there has been a renewal of interest in the industry, and many new enterprises have been set on foot. Unfortunately, however, some of these were badly managed and have come to grief, and the impression has gone abroad that the mining of gold in Alabama will not pay.

Certainly, it will not pay in the manner in which the work has been carried on at many places, for most of the plants are arranged solely for the winning of free gold and are practically useless after the mining has gone down to the drainage level, and the ore is in its original condition of a sulphuret. Thus most of the mills have ceased work after the free milling surface ore has been exhausted. A few years ago Dr. William B. Phillips undertook for the Alabama Survey an examination of the gold region of the state, but this work was interrupted by unavoidable circumstances after he had spent only a few weeks in the field. His report, in Bulletin No. 3 of the Alabama Survey documents, showed conclusively that with proper methods, such as are in use at the Hailes mine in South Carolina and elsewhere and adapted to the successful working of sulphurets, the mining of gold could be made profitable in many places within the borders of this state. The examinations of the last season have only served to confirm this opinion of Dr. Phillips and to bring to light a number of new localities where the mining of gold with proper methods of extraction may surely be made profitable. The gold does not seem to be distributed over the whole of our crystalline schists, but it is mainly confined to those belts of partially crystalline, argillaceous slates which have been named the Talladega formation by the Geological Survey. A part of these slates are equivalent to the Ocoee group of Dr. Safford in Tennessee. This is the belt which lies furthest towards the northwest, making the northwest border of the crystalline schists, but there are two other well defined belts of almost exactly identical rocks crossing our crystalline area further to the southeast, and these belts also are rich in gold-bearing quartz veins. In one locality only, of those examined, the gold is found in a fully crystalline mica schist.

In most instances the gold is associated with veins of quartz which appear to be interbedded with the slates themselves, and in such cases the veins are usually not solid sheets of quartz but strings of lenticular masses of quartz wrapped in the slates, and occupying a width or thickness of strata of twenty or thirty feet. In other instances the quartz veins cut across the strata and are then only a few inches in thickness but very rich in gold. In the westernmost belt of these gold bearing rocks, the quartz vein is quite thin, only a few inches, but on the other hand of exceptional richness. For several years past the attention of capitalists has been directed to the gold fields of this and adjoining states, and it appears certain that with ordinary care and good judgment in the management the mining of gold will soon be numbered among the paying industries of Alabama.